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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/706,819	11/12/2003	Je-kook Kim	8021-188 (SS-18085-US)	6942

22150 7590 04/27/2007

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EXAMINER	
ALUNKAL, THOMAS D	
ART UNIT	PAPER NUMBER
2627	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/27/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/706,819	KIM ET AL.	
	Examiner	Art Unit	
	Thomas D. Alunkal	2627	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 February 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-4,6,7,9-12,14-20,22-25,27-30 and 32-34* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) *4,6,7,9-12,14-20,22-25,27-30 and 32-34* is/are allowed.

6)☒ Claim(s) *1 and 2* is/are rejected.

7)☒ Claim(s) *3* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *12 November 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

Applicant's arguments, filed February 16, 2007, with respect to claims 4,7,11,9,12,16,17,20,25,29,30, and 34 have been fully considered and are persuasive. The previous USC § 102 rejections of said claims in the Office Action dated October 18, 2006 have been withdrawn.

However, applicant's arguments in regard to claims 1 and 2 have been fully considered and are not considered persuasive.

Applicant argues that Hwang (US 6,058,082), in Figure 4C, element 423 does not disclose comparing a voltage with a positive noise voltage. Similarly, applicant argues that Figure 4C, element 421 does not disclose comparing a voltage with a negative noise voltage level. The basis of these arguments is that Hwang discloses *predetermined* values, Vmax and Vmin, rather than a positive noise voltage level and a negative noise voltage level, respectively. However, as currently claimed, claim 1 recites *inter alia*, a duty measurer that compares the n-bit voltage data with **a** positive noise voltage and **a** negative noise voltage. Claim 1 does not further limit these two noise voltages from being a predetermined value, or anything other than a positive and negative noise voltage, which Vmax and Vmin represent. Thus, the previous grounds of rejection for claim 1 are maintained.

The grounds of rejection for claim 2, which depends from claim 1, are also maintained.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1 and 2 are rejected under 35 U.S.C. 102(b) as being anticipated by Hwang (U.S. 6,058,082).

Regarding claim 1, Hwang discloses an apparatus for detecting a type of an optical disc inserted into an optical disc system (Column 1, lines 32-34), the apparatus comprising an analog-to-digital converter (Figure 1, Element 7) that converts a focus error signal into an n-bit voltage data, and a duty measurer that compares the n-bit voltage data with a positive noise voltage level (Figure 4C, Element 423) and a negative voltage level (Figure 4C, Element 421), upcounts by a predetermined value if the n-bit voltage data is higher than the positive noise voltage level or lower than the negative voltage level (Figure 4C, Element 424) and outputs the upcounted result as a duty of the focus error signal (Figure 1, Element 8 and Column 5, lines 4-5).

Regarding claim 2, Hwang discloses a comparing unit that generates an upcount signal if the n-bit voltage data is higher than the positive noise voltage or lower than the negative voltage level (Figure 4C, Element 424 and Column 5, lines 4-5) and generates a hold signal if the n-bit voltage data is lower than the positive noise voltage level or higher than the negative voltage level (Figure 4C, Element 423. Element 423 displays

that when n-bit voltage data is lower than Vmax, the same count is held), and a counter that upcounts by a predetermined value in response to the upcount signal (Figure 4C, Element 424), holds a current value in response to the hold signal (Figure 4C, Element 423. Element 423 displays that when n-bit voltage data is lower than Vmax, the same count is held) and outputs the upcounted result as the duty of the focus error signal (Figure 1, Element 8 and Column 5, lines 4-5).

Allowable Subject Matter

Claim 3 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Regarding claim 3, none of the references of record alone or in combination suggest or fairly teach an apparatus for detecting a type of an optical disc inserted into an optical disc system, the apparatus including all the limitations of both claims 1 and 2, and wherein the comparing unit comprises a buffer register that buffers the n-bit voltage data, an absolute calculator that calculates an absolute value of the n-bit voltage data buffered by the buffer register, and a comparator that compares the absolute value output from the absolute value calculator with the positive noise level, generates the upcount signal if the absolute value is greater than the positive noise voltage level, and generates the hold signal if the absolute value is less than the positive noise voltage level.

Claims 4,6-7,9-12,14-20,22-25,27-30, and 32-34 are allowed.

The following is a statement of reasons for the indication of allowable subject matter:

Regarding independent claim 4, none of the references of record alone or in combination suggest or fairly teach an apparatus for detecting a type of an optical disc inserted into an optical disc system, the apparatus comprising: an analog-to-digital converter that converts a focus error signal into an n-bit voltage data; and a reflected light amount measurer that compares current voltage data of the n-bit voltage data with previous voltage data of the n-bit voltage data, upcounts by a predetermined value if the current voltage data is more than a predetermined value different from the previous voltage data, and outputs the upcounted result as an amount of reflected light, **wherein the reflected light amount measurer comprises: a comparing unit that compares the current voltage data with the previous voltage data, generates an upcount signal if the current voltage data is more than the predetermined value different from the previous voltage data, and generates a hold signal if the current voltage data is not different from the previous voltage data; and a counter that upcounts by a predetermined value in response to the upcount signal output from the comparing unit, holds a current count value in response to the hold signal, and outputs the upcounted result as the amount of reflected light.**

Regarding independent claim 7, none of the references of record alone or in combination suggest or fairly teach a method of detecting a type of an optical disc inserted into an optical disc system, the method comprising: detecting a focus error

signal from the optical disc; and measuring a duty of the focus error signal by detecting a voltage of the focus error signal and detecting the type of the optical disc depending on the measured duty, **wherein the detection of the type of the optical disc comprises: converting the focus error signal into n-bit voltage data; buffering the n-bit voltage data, comparing the n-bit voltage data with a positive noise voltage level and a negative noise voltage level; upcounting by a predetermined value if the n-bit voltage data is higher than the positive noise voltage level or lower than the negative noise voltage level; and outputting the upcounted result as the duty of the focus error signal.**

Regarding independent claim 11, none of the references of record alone or in combination suggest or fairly teach a recording medium readable by machine, tangibly embodying a program of instructions executable by the machine to perform the method steps of detecting a type of an optical disc inserted into an optical disc system, the method comprising: detecting a focus error signal from the optical disc; and measuring a duty of the focus error signal by detecting a voltage of the focus error signal and detecting the type of the optical disc depending on the measured duty, **wherein the detection of the type of the optical disc comprises: converting the focus error signal into n-bit voltage data; buffering the n-bit voltage data, comparing the n-bit voltage data with a positive noise voltage level and a negative noise voltage level; upcounting by a predetermined value if the n-bit voltage data is higher than the positive noise voltage level or lower than the negative noise voltage level; and outputting the upcounted result as the duty of the focus error signal.**

Regarding independent claim 12, none of the references of record alone or in combination suggest or fairly teach a method of detecting a type of an optical disc inserted into an optical disc system, the method comprising: detecting a focus error signal from the optical disc; and measuring an amount of reflected light of the focus error signal by detecting a voltage of the focus error signal and detecting the type of the optical disc depending on the measured amount of reflected light, **wherein the detection of the type of the optical disc comprises: converting the focus error signal n-bit voltage data; and comparing current voltage data of the n-bit voltage data with previous voltage data of the n-bit voltage data, upcounting or downcounting by a predetermined value if the current voltage data is more than a predetermined value different from the previous voltage data, and outputting the upcounted or downcounted result as the amount of reflected light.**

Regarding independent claim 16, none of the references of record alone or in combination suggest or fairly teach a recording medium readable by machine, tangibly embodying a program of instructions executable by the machine to perform the method steps of detecting a type of an optical disc inserted into an optical disc system, the method comprising detecting a focus error signal from the optical disc; and measuring an amount of reflected light of the focus error signal by detecting a voltage of the focus error signal and detecting the type of the optical disc depending on the measured amount of reflected light, **wherein the detection of the type of the optical disc comprises: converting the focus error signal n-bit voltage data; and comparing current voltage data of the n-bit voltage data with previous voltage data of the n-**

bit voltage data, upcounting or downcounting by a predetermined value if the current voltage data is more than a predetermined value different from the previous voltage data, and outputting the upcounted or downcounted result as the amount of reflected light.

Regarding independent claim 17, none of the references of record alone or in combination suggest or fairly teach an apparatus for adjusting a track balance in an optical disc system, the apparatus comprising: an analog-to-digital converter that converts a tracking error signal into n-bit voltage data; **a duty measurer that buffers the n-bit voltage data, compares the n-bit voltage data with a predetermined reference voltage, upcounts or downcounts by a predetermined value based on the comparison result, and outputs the counted result accumulated for a predetermined balance adjustment time as an unbalance value of the tracking error signal**; and a controller that compares the unbalance value with a predetermined allowable error and outputs a balance control signal to adjust a balance of the tracking error signal, if the unbalance value exceeds the predetermined allowable error.

Regarding independent claim 20, none of the references of record alone or in combination suggest or fairly teach an apparatus for adjusting a track balance in an optical disc system by a detecting a voltage of a tracking error signal, the apparatus comprising: an analog-to-digital converter that converts the tracking error signal into n-bit voltage data; and a reflected light amount measurer that compares current voltage data of the n-bit voltage data and previous voltage data of the n-bit voltage data with a reference voltage, upcounts or downcounts by a predetermined value based on the

comparison result, and outputs the counted result accumulated for a predetermined balance adjustment time as an unbalance value of the tracking error signal; and a controller that compares the unbalance value with a predetermined allowable error and outputs a balance control signal to adjust a balance of the tracking error signal if the unbalance value exceeds the predetermined allowable error, **wherein the reflected light amount measurer comprises: a comparing unit that compares the current voltage data with the previous voltage data, compares the current voltage data and the previous voltage data with a reference voltage if a predetermined voltage difference occurs between the current voltage data and the previous voltage data, and generates an upcount signal, a downcount signal, or a hold signal based on the comparison result; and a counter that upcounts by a predetermined value in response to the upcount signal, downcounts by a predetermined value in response to the downcount signal, or holds a current count value in response to the hold signal, and outputs the counted value accumulated for the predetermined balance adjustment time as the unbalance value.**

Regarding independent claim 25, none of the references of record alone or in combination suggest or fairly teach a method of adjusting a track balance in an optical disc system, the method comprising: detecting a tracking error signal from an optical disc inserted into the optical disc system; detecting a voltage of the tracking error signal and measuring a duty of the tracking error signal with respect to a predetermined reference voltage as an unbalance value for a predetermined balance adjustment time; and comparing the unbalance value with a predetermined allowable error and

generating a balance control signal to adjust a balance of the tracking error signal if the unbalance value exceeds the predetermined allowable error, **wherein the measuring of the unbalance value comprises: converting the tracking error signal into n-bit voltage data; buffering the n-bit voltage data, and comparing the n-bit voltage data with the reference voltage, upcounts or downcounts by a predetermined value for the predetermined balance adjustment time based on the comparison result and outputting the counted result accumulated for the predetermined balance adjustment time as the unbalance value**.

Regarding independent claim 29, none of the references of record alone or in combination suggest or fairly teach a recording medium readable by machine, tangibly embodying a program of instructions executable by the machine to perform the method steps for adjusting a track balance in an optical disc system, the method comprising: detecting a tracking error signal from an optical disc inserted into the optical disc system; detecting a voltage of the tracking error signal and measuring a duty of the tracking error signal with respect to a predetermined reference voltage as an unbalance value for a predetermined balance adjustment time; and comparing the unbalance value with a predetermined allowable error and generating a balance control signal to adjust a balance of the tracking error signal if the unbalance value exceeds the predetermined allowable error, **wherein the measuring of the unbalance value comprises: converting the tracking error signal into n-bit voltage data; buffering the n-bit voltage data, and comparing the n-bit voltage data with the reference voltage, upcounts or downcounts by a predetermined value for the predetermined balance**

adjustment time based on the comparison result and outputting the counted result accumulated for the predetermined balance adjustment time as the unbalance value.

Regarding independent claim 30, none of the references of record alone or in combination suggest or fairly teach a method of adjusting a track balance in an optical disc system, the method comprising: detecting a tracking error signal from an optical disc inserted into the optical disc system; detecting a voltage of the tracking error signal and measuring an amount of reflected light of the tracking error signal with respect to a predetermined reference voltage as an unbalance value of the tracking error signal for a predetermined balance adjustment time; and comparing the unbalance value with a predetermined allowable error and generating a balance control signal to adjust a balance of the tracking error signal if the unbalance value exceeds the predetermined allowable error, **wherein the outputting of the unbalance value comprises: converting the tracking error signal into n-bit voltage data; and comparing current voltage data of the n-bit voltage data and previous voltage data of the n-bit voltage data with a reference voltage, upcounting or downcounting by a predetermined value for the balance adjustment time, and outputting the counted result accumulated for the balance adjustment time as the unbalance value.**

Regarding independent claim 34, none of the references of record alone or in combination suggest or fairly teach a recording medium readable by machine, tangibly embodying a program of instructions executable by the machine to perform the method steps for adjusting a track balance in an optical disc system, the method comprising:

detecting a tracking error signal from an optical disc inserted into the optical disc system; detecting a voltage of the tracking error signal and measuring an amount of reflected light of the tracking error signal with respect to a predetermined reference voltage as an unbalance value of the tracking error signal for a predetermined balance adjustment time; and comparing the unbalance value with a predetermined allowable error and generating a balance control signal to adjust a balance of the tracking error signal if the unbalance value exceeds the predetermined allowable error **wherein the outputting of the unbalance value comprises: converting the tracking error signal into n-bit voltage data; and comparing current voltage data of the n-bit voltage data and previous voltage data of the n-bit voltage data with a reference voltage, upcounting or downcounting by a predetermined value for the balance adjustment time, and outputting the counted result accumulated for the balance adjustment time as the unbalance value.**

Dependent claims 6,9-10,14-15,18-19,22-24,27-28, and 32-33 are allowed with there respective base claims.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Hwang (US 6,058,082) discloses a method for discriminating a type of a disc and a digital versatile disc system adopting the same. Kadlec (US 6,882,603) discloses a digital tracking servo system with tracking state detection. Hasimoto (US 6,243,341) disclose a method of distinguishing disks having nearly the

same reflectance. Yoshida et al. (US 5,003,521) disclose an optical disk discriminating device. Kim (US 5,748,597) discloses a multi-layered disk focusing method and apparatus.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thomas D. Alunkal whose telephone number is (571)270-1127. The examiner can normally be reached on M-F 7:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wayne Young can be reached on (571)272-7582. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Thomas Alunkal

WAYNE YOUNG
SUPERVISORY PATENT EXAMINER